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Quality of service assessment in connected vehicles

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title: Quality of Service Assessment in Connected Vehicles
keywords: QoS; V2V; V2x; ANOVA; PCA; CVN.
abstract: In recent years, there has been a huge interest in Machine-to-Machine connectivity under the umbrella of Internet of Things (IoT). With the UK Government looking to trial autonomous (driverless) cars this year, connected vehicles will play a key part in improving and managing existing road safety and congestion, leading to a new generation of intelligent transport systems. This is also well aligned to the current initiatives by the automotive industry to improve the driver's experience on-board. However, the wireless channels most suitable for this application have not been standardized. In this paper, we review the wireless channels suitable for vehicle-2-vehicle (V2V) and Vehicle–to-x (V2x) connectivity. We further present preliminary analysis on the factors that impact the Quality of Service (QoS) of connected vehicles. We use the open access GEMV2 data to carry out Analysis of Variance (ANOVA) and Principal Component Analysis (PCA) on the link quality and found that both line of sight and non line of sight has a significant impact on the link quality. The work presented here will help in the development of connected vehicle network (CVN) prediction model and control for V2V and V2x connectivity. It will further contribute towards unfolding and testing key research questions in the context of connected vehicles which may otherwise be overlooked.
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